

# SIEMENS

## SIREMOBIL Iso-C

**SP**

### Installation Instructions

2D Navigation Medivision

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## Safety Information

**⚠ CAUTION**

When performing the work steps and tests, the product-specific safety information contained in the documents, as well as the general safety information TD00-000.860.01... must be observed.

## Notes and Symbols

Emphasized texts in technical documentation have the following meaning:

**⚠ DANGER**

**DANGER** indicates an immediate danger with a potential for death or serious physical injury.

**⚠ WARNING**

**WARNING** indicates a risk of danger that may lead to death or serious physical injury.

**⚠ CAUTION**

**CAUTION** used with the safety alert symbol indicates a risk of danger that could result in slight or moderate physical injury and/or damage to property.

**NOTICE**

**NOTICE** used without the safety alert symbol indicates a risk of danger that if disregarded leads or may lead to a potential situation which may result in an undesirable result or state other than death, physical injury or property damage.

## Navigation system on the SIREMOBIL Iso-C and SIREMOBIL Iso-C 3D

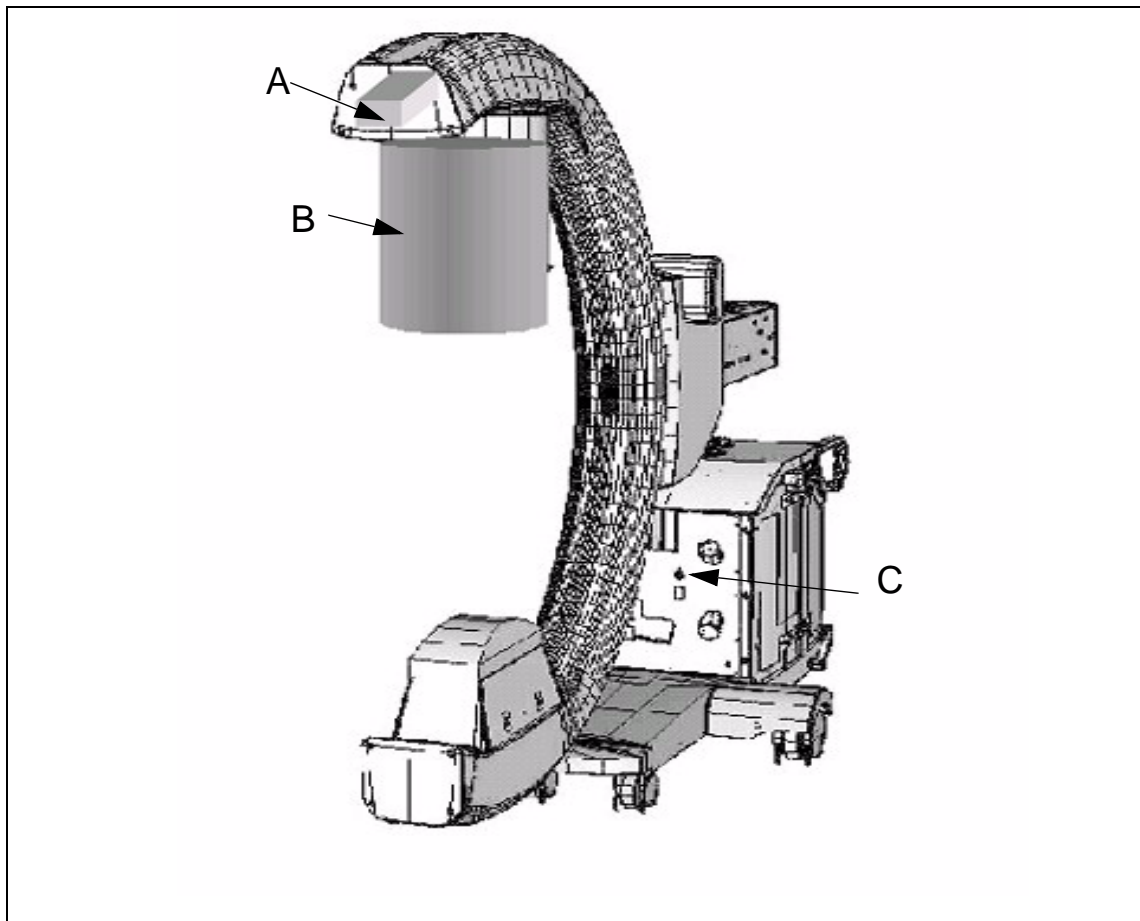


Fig. 1

- A = Electronics box (Strober box)
- B = Diode shield (Trash can)
- C = Navigation system connection

The Medivision navigation system can be installed on the SIREMOBIL Iso-C as an integrated solution.

The navigation system is manufactured by Medivision.

Medivision engineers are responsible for performing the navigation system installation.

An upgrade package for the navigation system is provided by Siemens.

Siemens engineers are responsible for installing the upgrade package.

The cabling has not yet been prepared for Siremobil Iso-C systems with serial numbers up to 1408.

The cabling has been prepared for Siremobil Iso-C systems with serial number 1409 and higher.



**CAUTION**

**Observe the "Safety information" in chapter 1.**

## Tools required

regular installation tools

30 mm socket wrench

soldering iron

Pliers for Zipper hose 75 38 742

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## Pre-installation activities for the navigation components

### Functional inspection

- Functional inspection of the SIREMOBIL Iso-C or SIREMOBIL Iso-C 3D using the operating manual.

### Image Quality Quick Test

- Perform the following tests from the IQ Quick Test
  - Chapter 2 Checking the ADR curves
  - Chapter 3 Resolution.

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## C-arm



Fig. 1 Cables inside the C-arm

- Remove the C-arm cover on the side of the I.I. image intensifier. This part will no longer be needed.  
Dispose of the cover properly.
- Inside the C-arm, there is a bundle of cables on the cable harness that is not connected.
- Pull out this bundle of cables as far as possible.
- Loosen the toothed belt.
- Uncover the bundle to expose the individual wires (at least 5 cm); i.e., using a sharp knife, carefully cut through the outer cover it is very thin.
- Twist the braided shielding.
- Locate the individual white, brown, green, and yellow wires.
- Strip 1.5 cm from the end of each of these 4 wires.
- Slide a large 12 cm shrink tube over the cable (part no. 71 39 905-1).
- Slide 4 small shrink tubes over the individual wires.
- Solder the 4 individual wires to cable part no. 71 39 905-01 according to the color codes.
- Pull the shrink tubes over the soldered connections and apply heat; the soldering iron can be used for this purpose.
- Solder the braided shielding.
- Insert the 3 unused wires into the large shrink tube.
- Pull the large shrink tube over the wires and apply heat.
- Retighten the toothed belt.

### Basic system

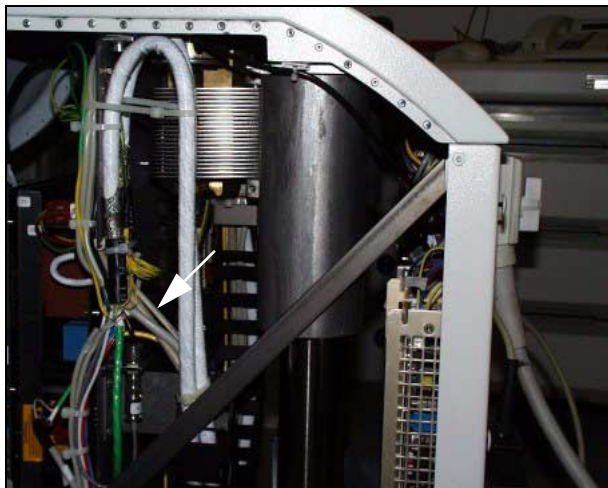


Fig. 2 Cables inside the basic system

- At the energy chain, there is a bundle of cables on the cable harness that is not connected.
- Pull out this bundle of cables as far as possible.
- Uncover the bundle to expose the ends of the individual wires (at least 5 cm).
- Locate the individual white, brown, green, and yellow wires.
- Strip 1.5 cm from the end of each of these 4 wires.
- Slide a large 12 cm shrink tube over the cable (part no. 71 39 905-2).
- Slide 4 small shrink tubes over the individual wires.
- Solder the 4 individual wires to cable (part no. 71 39 905-02) according to the color codes.
- Pull the shrink tubes over the soldered connections and apply heat; the soldering iron can be used for this purpose.
- Insert the 3 unused wires into the large shrink tube.
- Pull the large shrink tube over the wires and apply heat.

## Cable no. 7, part no. n/a



Fig. 3 Cable no. 7

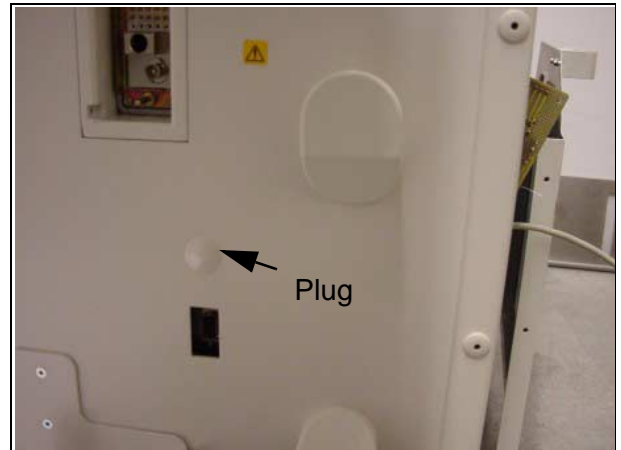


Fig. 4 Front of system



Fig. 5 Routing cable no. 7



Fig. 6 CAN connector is installed

- Remove the plug from the front of the system.
- Remove the nut and toothed washer from the CAN plug on cable no. 7.
- Pull both cables through the opening.
- Pull both cables through the nut and the toothed washer.

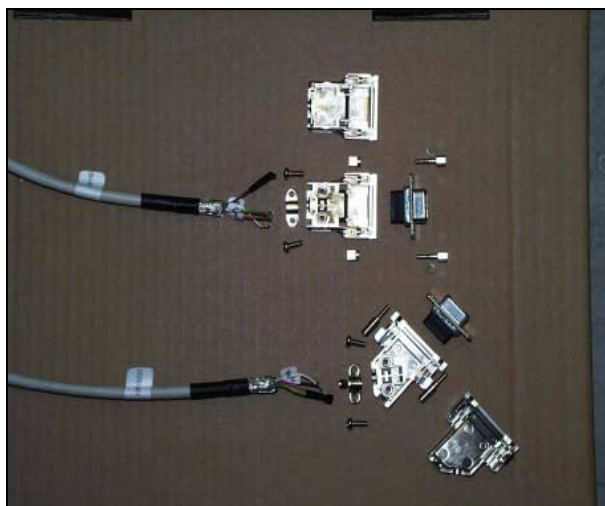


Fig. 7 Parts of the connector

- Insert the connector into the front. The red marking has to point upward (refer to picture).
- Attach the nut only using a long socket wrench. Do not forget the toothed washer.
- Insert the labeled core ends with contacts at the end of cable D200.X1001 into the slanted connector housing D200.X1001.
  - Insert core X1001.7 into contact 7 until it locks into place.
  - Insert core X1001.2 into contact 2 until it locks into place.
- Move the connector into the housing.
- Attach the strain relief using screws.
- Insert the bolts.
- Insert the connector housing and ensure that it fully locks into position.
- Secure connector housing D200.X1001 to the system. This connector will be used for the 3D image reconstruction.



Fig. 8 "Strober" plug is secured

- Insert the labeled cores with contacts at the end of the "Strober" cable into the connector housing.
  - Insert 1 into contact 1 until it locks into position.
  - Insert 2 into contact 2 until it locks into position.
  - Insert 3 into contact 3 until it locks into position.
  - Insert 4 into contact 4 until it locks into position.
- Move the connector into the housing.
- Attach the strain relief using screws.
- Insert the nuts.
- Insert the connector housing and ensure that it fully locks into position.
- Connect the "Strober" plug with the "Strober" plug of the main cable harness.
- Secure it to the system with cable ties as shown in the picture.

**Monitor trolley****Cable part no. 71 39 905-07**

- Remove the back cover.
- Remove the cover for the system folder compartment.
- Remove the blind plate from the system folder compartment cover.
- Pull cable no. 71 39 905-07 through, and attach the coupling device with screws; for the lower screws use the 17 mm covered screws.
- Attach 2 M4 washers to the long covered screws.
- Attach the PC relay board D250 part no. 71 40 036 to these 2 screws and fasten with cable clamps, washers, contact washers and nuts.
- Insert connector "D250.X2" into the PC relay board "D250.X2."
- Guide the "Navigation" connector down the side of the monitor trolley, on the left side, as seen from behind (to be connected later to cable 71 39 855-9).



## Cable part no. 71 39 905-08

- Insert connector "D250.X1" into the PC relay board plug-in connection "D250.X1."
- Route contacts "D50.X4.3" and "D50.X4.4" down the side of the monitor trolley.



Fig. 9 Connector "D50.X4"

- Remove the connector X4 from D50.
- Insert contacts "D50.X4.3" and "D50.X4.4" into connector X4. Ensure that the labels are correct.
- Reconnect connector X4.
- Using cable clamps, secure both cables (part nos. 71 39 905-7 and -8) to the PC relay board.

## Cable part no. 71 39 855-14

- Connect the cable to the PC relay board D250.
- Route cable downward to the center compartment.

### If a printer is installed

- Connect cable no. 71 39 855 14 to the printer port "out."  
Ensure that the terminal impedance of the printer is switched to high impedance.

### If a printer is not installed

- Connect cable no. 71 39 855 14 to the printer port "out 3."

Check the programming on the Memoskop. "Port for video recorder (Mon A)"; printer OUT set to high impedance.

**Cable no. 71 39 855-9**

- Connect the "Navigation" plug with the "Navigation" plug of cable no. 71 39 905-7.
- The "3D PC plug" is no longer needed. Secure it inside the monitor trolley.

**Cable no. 71 39 855-8**

- Connect the "X100" plug to the "X100" plug of cable part no. 71 39 905-9.
- Route the cable parallel to the monitor cable. Insert both cables into the Zipper hose. Close the Zipper hose using the pliers for the Zipper hose.
- Connect the cable to the CAN plug of the basic system.

## Installation of CAN cable

Cable no. 7, part no. n/a



Fig. 1 Cable no. 7

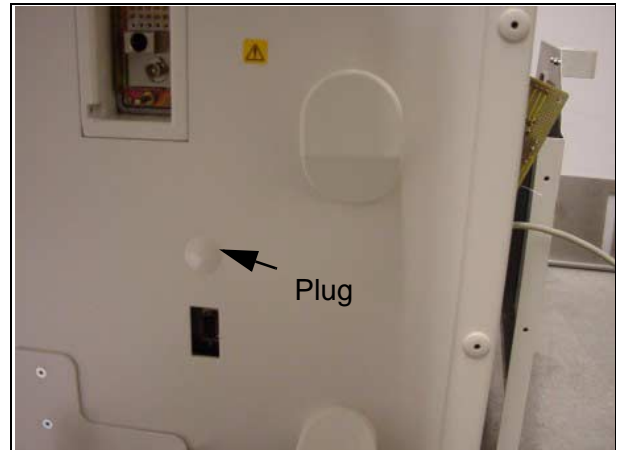


Fig. 2 Front of system



Fig. 3 Routing cable no. 7



Fig. 4 CAN connector is installed

- Remove the plug from the front of the system.
- Remove the nut and toothed washer from the CAN plug on cable no. 7.
- Pull both cables through the opening.
- Pull both cables through the nut and the toothed washer.

## 4 - 2 SIREMOBIL Iso-C, serial numbers 1409 and higher

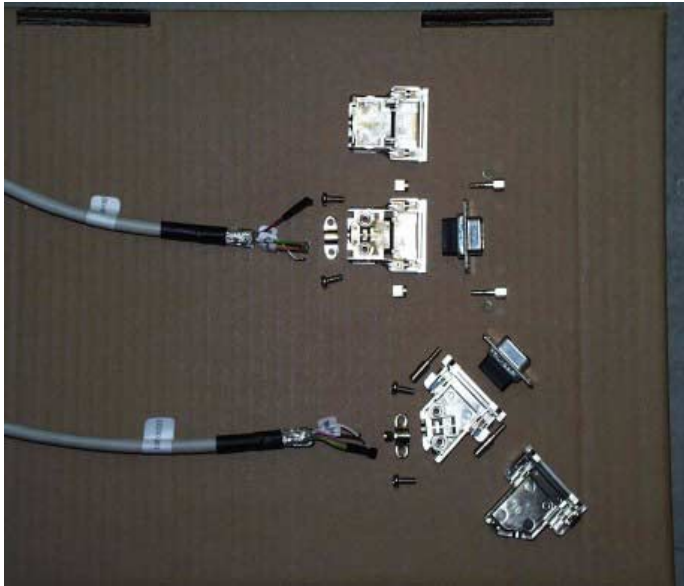


Fig. 5 Parts of the connector

- Insert the connector into the front. The red marking has to point upward (refer to picture).
- Attach the nut only using a long socket wrench. Do not forget the toothed washer.
- Insert the labeled core ends with contacts at the end of cable D200.X1001 into the slanted connector housing D200.X1001.
  - Insert core X1001.7 into contact 7 until it locks into place.
  - Insert core X1001.2 into contact 2 until it locks into place.
- Move the connector into the housing.
- Attach the strain relief using screws.
- Insert the bolts.
- Insert the connector housing and ensure that it fully locks into position.
- Secure connector housing D200.X1001 to the system. This connector will be used for the 3D image reconstruction.

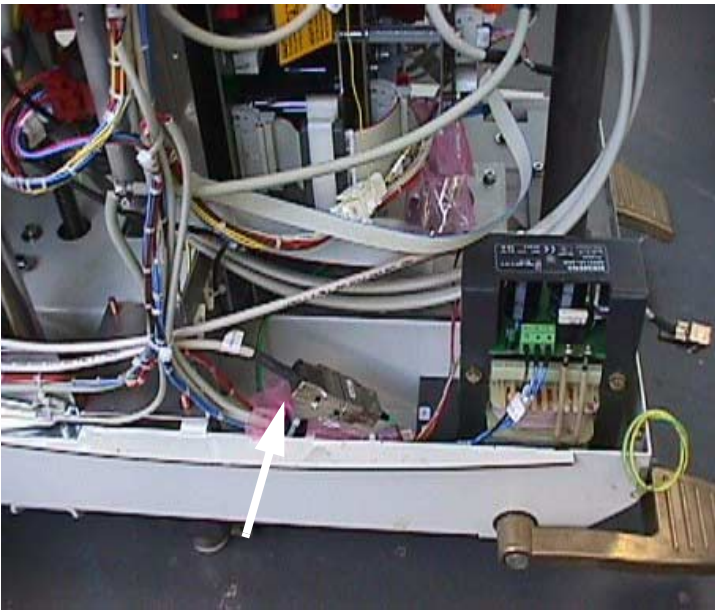


Fig. 6 "Strober" plug is secured

- Insert the labeled cores with contacts at the end of the "Strober" cable into the connector housing.
  - Insert 1 into contact 1 until it locks into position.
  - Insert 2 into contact 2 until it locks into position.
  - Insert 3 into contact 3 until it locks into position.
  - Insert 4 into contact 4 until it locks into position.
- Move the connector into the housing.
- Attach the strain relief using screws.
- Insert the nuts.
- Insert the connector housing and ensure that it fully locks into position.
- Connect the "Strober" plug with the "Strober" plug.
- Secure it to the system with cable ties as shown in the picture.

## 4 - 4 SIREMOBIL Iso-C, serial numbers 1409 and higher

### Monitor trolley

#### Cable part no. 71 39 905-07

- Remove the back panel.
- Remove the cover of the system folder compartment.
- Remove the blind plate from the system folder compartment cover.
- Draw in cable no. 71 39 905-07.
- Route the "Navigation" plug of the cable fastened to the terminating plate to the side in the monitor trolley downwards on the left side viewed from the back, (this is connected later with cable 71 39 855-9).



Fig. 7

- Install the new connection plate. Use the panel screws 17 mm in length for the lower screws
- Install the terminating resistor with a M4x8 screw as shown in the picture.  
Do not yet fasten the system folder compartment cover to the monitor trolley.



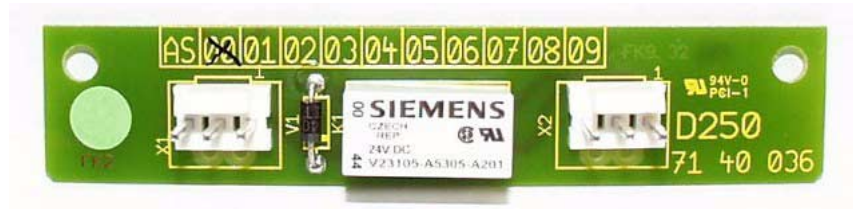


Fig. 8 PCB D250

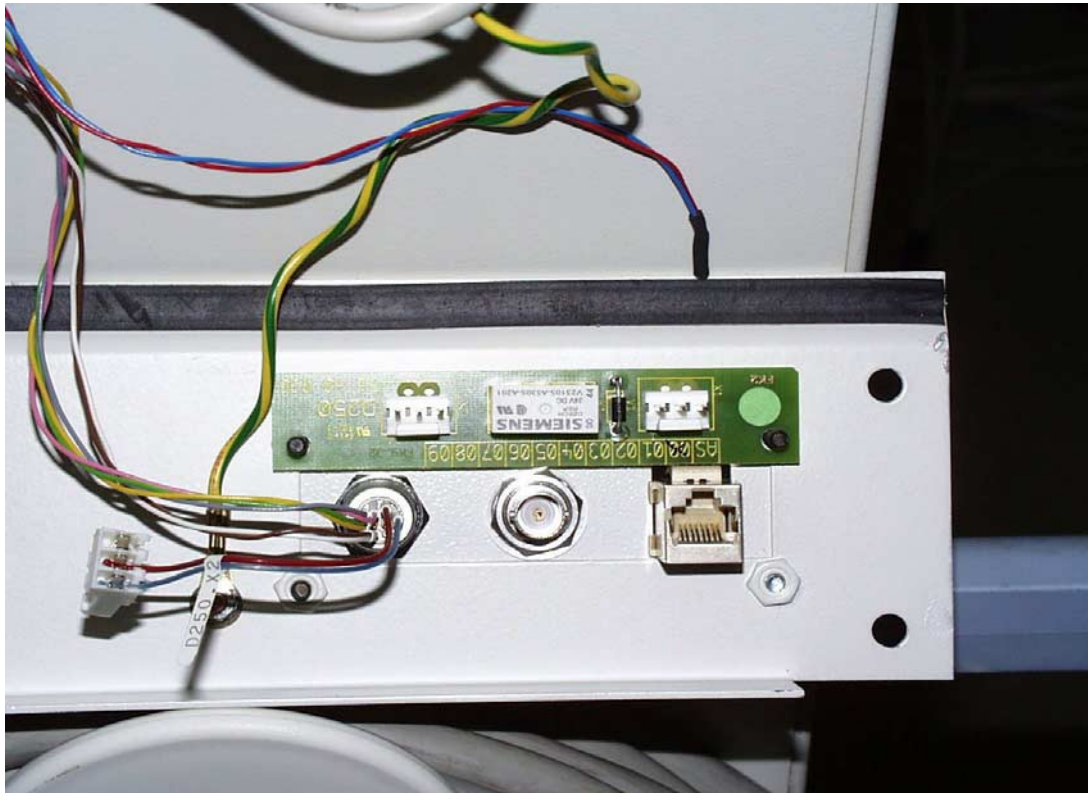


Fig. 9 Installation position of the PCB D250

- Attach 2 M4 washers to the long panel screws.
- Attach the PC relay board D250 part no. 71 40 036 to these 2 screws and fasten with cable clamps, washers, contact washers and nuts.

## 4 - 6 SIREMOBIL Iso-C, serial numbers 1409 and higher

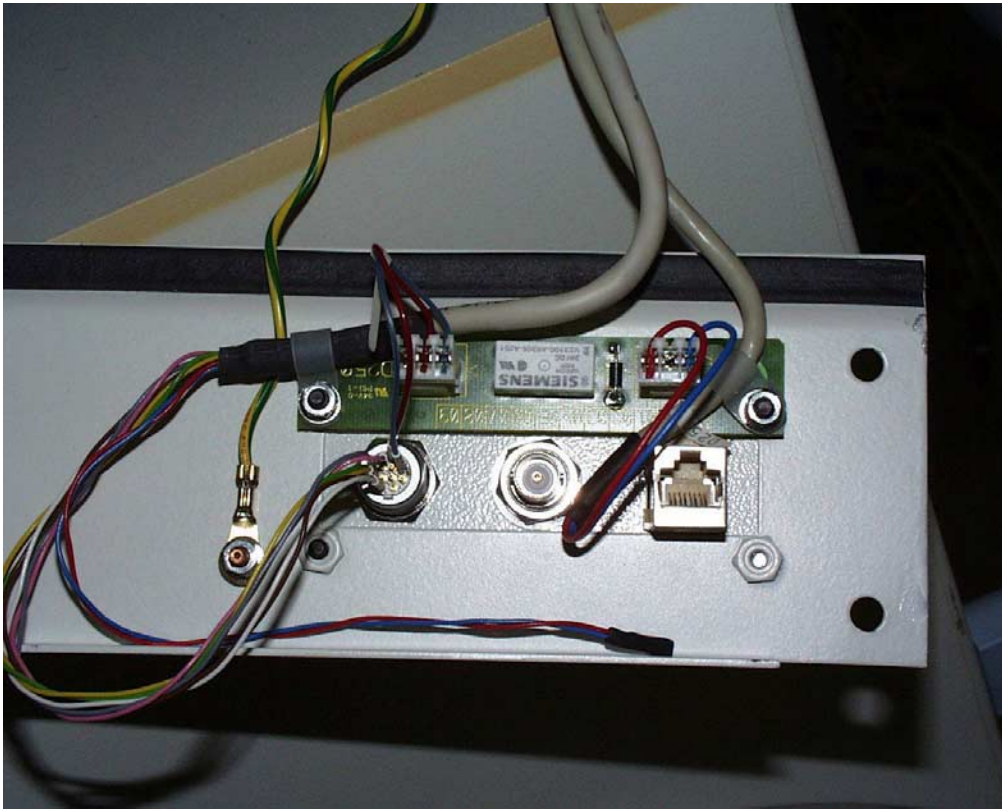


Fig. 10 Fastening the cables

- Fasten the cables as shown in the picture, in the order of cable clamp, washer, contact washer and nut.
- Insert connector "D250.X1" into the PC relay board plug-in contact "D250.X1."
- Insert connector "D250.X2" into the PC relay board plug-in contact "D250.X2."
- Fasten the system folder compartment cover back on the monitor trolley.

### **Cable part no. 71 39 905-8**

- Insert connector "D250.X1" into the PC relay board plug-in connection "D250.X1."
- Route contacts "D50.X4.3" and "D50.X4.4" down the side of the monitor trolley.





Fig. 11 Connector "D50.X4"

- Remove the connector X4 from D50.
- Insert contacts "D50.X4.3" and "D50.X4.4" into connector X4. Ensure that the labels are correct.
- Reconnect connector X4.
- Using cable clamps, secure both cables (part nos. 71 39 905-7 and -8) to the PC relay board.

### **Cable part no. 71 39.855-14**

- Connect the cable to the PC relay board D250.
- Route cable downward into the center compartment.

### **If a printer is installed**

- Connect cable no. 71 39 855 14 to the printer port "out."  
Ensure that the terminal resistor of the printer is switched to high impedance.

### **If a printer is not installed**

- Connect cable no. 71 39 855 14 to the printer port "out 3." Check the programming on the Memoskop. "Output for video recorder (Mon A)"; printer OUT set to high impedance.

## **4 - 8      SIREMOBIL Iso-C, serial numbers 1409 and higher**

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### **Cable no. 71 39 855-9**

- Connect the "Navigation" plug with the "Navigation" plug of cable no. 71 39 905-7.
- The "3D PC plug" is no longer needed. Secure it inside the monitor trolley.

### **Cable no. 71 39 855-8**

- Connect the "X100" plug with the "X100" plug of cable no. 71 39 905-9.
- Route the cable parallel to the monitor cable. Insert both cables into the Zipper hose. Close the Zipper hose using the pliers for the Zipper hose.
- Connect the cable to the CAN outlet of the basic system.

Additional activities for SIREMOBIL Iso-C systems equipped with 3D image reconstruction

## Basic system

- Plug the connector housing D200.X1001 (built into the system) into the D200 PC relay board, connector contact X1001.

## Monitor trolley

- Plug the "3D-PC" connector into the PC plug-in location "CAN-Port". Refer to the SIREMOBIL Iso-C 3D installation instructions.

## 5 - 2      **SIREMOBIL Iso-C with 3D image reconstruction**

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## Image intensifier



Fig. 1



Fig. 2

- Remove the screws from the grid holder.
- Remove the microswitch.



Fig. 3



Fig. 4

- Uninstall the microswitch holder.
- Remove the image intensifier grid.
- Install the image intensifier grid in the new support ring supplied by the third-party manufacturer. Note the correct position of the identification plate.
- Install the microswitch holder.

- Reinstall the microswitch.
- Reinstall the support ring on the image intensifier.
- Transfer the part numbers and serial number located on the image intensifier housing labels to the identification plates.
- Attach these identification plates to the housing of the navigation system.
- Slide the additional housing (diode shield "Trash can", supplied by the manufacturer) over the image intensifier housing and secure with long screws.

### Installing the Strober box



Fig. 5 Cover removed

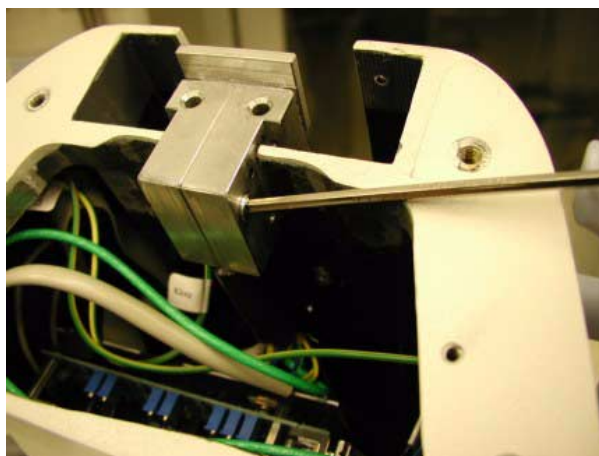


Fig. 6 Allen wrench

- Remove the C-arm cover on the side of the I.I. image intensifier (if not already done). This part will no longer be needed. Properly dispose of the cover with lead weight.
- Remove the Allen screw

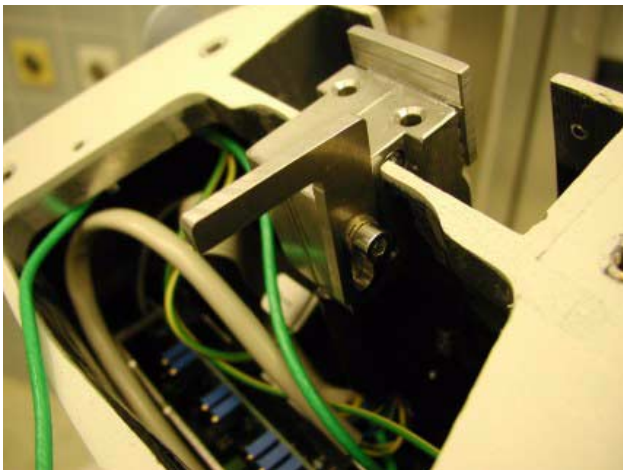


Fig. 7 Installing the angle bracket.

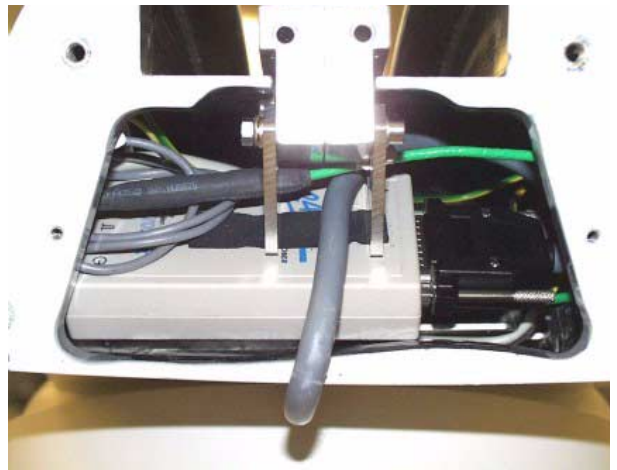


Fig. 8 Installing the Strober box.

- Install the 2 angle brackets.
- Connect the electronics box (Strober box) with the "Strober" plug located inside the C-arm.
- Connect the cable from the diode shield "Trash can" to the electronics box.



Fig. 9 Securing the Strober box

- Install and secure the Strober box inside the C-arm.

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## Counterbalance

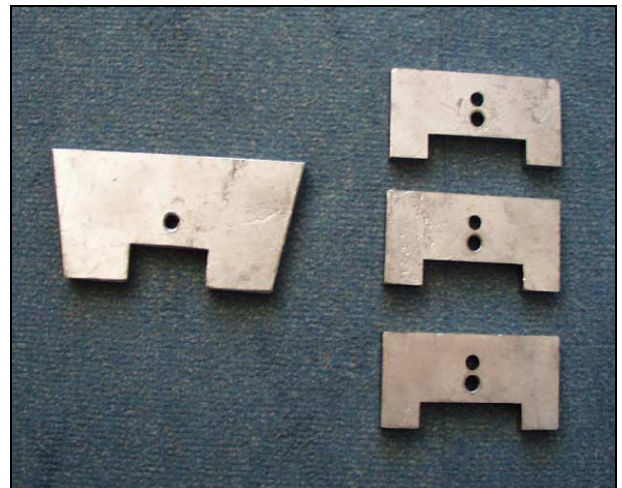
The C-arm requires counterbalancing.

- Remove the C-arm cover, if you have not already done so. The cover on the image intensifier side will be replaced by a new one.
- Check whether the end cap on the side of the X-ray tube is made of brass or steel. This can be verified by scraping some paint off the inside of the end cap.



**0.7 kg each**

Fig. 1 Lead weights on the image intensifier side



**0.9 kg**

**0.5 kg each**

Fig. 2 Lead weights on the tube side

### If the end caps are made of brass

#### Lead weights on the image intensifier side

- Install 2 lead weights of 0.7 kg each in the new cover.

#### Lead weights on the tube side

- 1 lead weight of 0.5 kg must be installed here in the cover in addition.

### If the end caps are made of steel

#### Lead weights on the image intensifier side

- Install 3 lead weights of 0.7 kg each in the new cover.

#### Lead weights on the tube side

- 1 lead weight of 0.9 kg and 2 lead weights of 0.5 kg must be installed here in the cover in addition.



Fig. 3 New lead cover



Fig. 4 C-arm cover is installed



Fig. 5 Cable cover

- Install the new C-arm cover on the image intensifier side.
- Attach the cable cover.
- Install the new C-arm cover on the X-ray tube side.

## Checking the counterbalance



Fig. 6 Starting position



Fig. 7 Tilted position

- The angulation brake need to be tightened, if the C-arm tilts from the starting position by more than 3 °.
- Using a 30 mm socket wrench, tighten the brake on the back of the horizontal carriage.



Fig. 8 C-arm in 95° position



Fig. 9 10° deviation

- Switch on the SIREMOBIL Iso-C.
- Move the C-arm to the 95° position (= end stop) (I.I. at the basic system).
- Release the brake.

**The deviation should not be more than 10°.**

- Move the C-arm in the opposite end position (X-ray tube at the basic system).
- Release the brake.

**The deviation should not be more than 10°.**

- Due to the influences of aging and frequency of use of the SIREMOBIL Iso-C, the friction resistance of the cable module can change.
- This can lead to deviations of more than 10°.
- In this case, you will need to modify the weight ratio.
- Attempt to determine the correct weight ratio by adding or removing the supplied lead weights in the end caps, as required.

**Notice: please read this safety information.**

Please refer to the current service instructions for the navigation system.

- Should service work be performed on a SIREMOBIL Iso-C equipped with a navigation system, the service engineer is required to answer the questions below at the time of each service call.
- Was the image intensifier or X-ray tube replaced?
- Were mechanical modifications made to the position of the image intensifier camera, the collimator adjustment, the focal spot of the X-ray emitter or the C-arm?
- If one or more questions were answered with "yes," inform the customer about the service call.
- Indicate that the calibration has to be checked.

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Chap. 0                      Front page, Revision level and Table of contents new generated

Chap. 1 to Chap. 9      Revision level new generated

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